WHAT IS CLAIMED IS:

Sub A1

1. A method of determining the concentration of an analyte in a sample of low transmissivity, said method comprising:

(a) producing a sample beam from a sample of low transmissivity and a reference beam from a reference;

(b) producing a null signal from said sample and reference beams; and

(c) deriving the presence of said analyte in said sample of low transmissivity from said null signal.

2. The method according to Claim 1, wherein said method comprises using forward and backward beams produced from at least one infrared radiation source to produce said sample and reference beams.

3. The method according to Claim 1, wherein said method further comprises passing light through an interferometer.

4. The method according to Claim 1, wherein said forward and backward beams are produced from a single infrared radiation source.

5. The method according to Claim 1, wherein said forward and backward beams are produced from two infrared radiation sources.

6. A method of determining the concentration of an analyte in a sample of low transmissivity, said method comprising:

Sub A2

(a) producing a sample beam from a sample of low transmissivity and a reference beam from a reference using forward and backward beams produced from at least one infrared radiation source;

(b) producing a null signal from said sample and reference beams, with the proviso that said steps (a) and (b) further comprise passing light through an interferometer; and

(c) deriving the presence of said analyte in said sample of low transmissivity from said null signal.

7. The method according to Claim 6, wherein said forward and backward beams are produced from a single infrared radiation source.

8. The method according to Claim 6, wherein said forward and backward beams are produced from two infrared radiation sources.

9. The method according to Claim 6, wherein said null signal is optically produced by combining said sample and reference beams prior to detection at a single detector.

10. The method according to Claim 6, wherein said null signal is electronically produced following detection of said sample and reference beams at two separate detectors.

11. The method according to Claim 6, wherein said method comprises:

(a) producing a forward beam and a backward beam with an interferometer from a single infrared radiation source;

(b) directing said forward beam into said sample of low transmissivity and directing said backward beam into a reference and collecting a sample beam and a reference beam, respectively;

(c) combining said sample and reference beams to produce a nulled beam;

(d) detecting said nulled beam with a single detector to obtain a detected null signal; and

(e) deriving the presence of said analyte in said sample of low transmissivity from said detected null signal.

12. The method according to Claim 6, wherein said method comprises:

(a) producing a forward beam and a backward beam from at least one infrared radiation source;

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(b) directing said forward beam through said sample of low transmissivity and directing said backward beam through a reference to produce a sample beam and a reference beam, respectively;

(c) introducing said sample and reference beams into an interferometer and producing a null signal from said sample and reference beams following their exit from said interferometer; and

(d) deriving the presence of said analyte in said sample of low transmissivity from said null signal.

13. The method according to Claim 6, wherein said sample of low transmissivity is at least one of highly reflective and highly absorptive.

14. The method according to Claim 13, wherein said sample is a physiological sample.

15. The method according to Claim 14, wherein said physiological sample is selected from the group consisting of blood, tissue or a derivative thereof.

16. The method according to Claim 6, wherein said reference comprises water.

17. The method according to Claim 16, wherein said reference is a fluid.

18. The method according to Claim 16, wherein said reference is a solid.

19. The method according to Claim 6, wherein said reference has a variable pathlength.

20. The method according to Claim 6, wherein said analyte is glucose.

21. A dual beam infrared spectrometer device for use in determining the concentration of an analyte a sample of low transmissivity, said device comprising:

means for producing a forward beam and a backward beam from at least one infrared source;

means for producing a sample beam and a reference beam from said forward and backward beams; and

means for producing a null signal from said sample and reference beams.

22. The device according to Claim 21, wherein said device further comprises an interferometer means.

23. The device according to Claim 21, wherein said device further comprises a means for deriving said analyte concentration from said null signal.

24. The device according to Claim 21, wherein said device comprises a reference.

25. The device according to Claim 24, wherein said reference is a variable path length reference.

26. The device according to Claim 24, wherein said reference comprises a liquid.

27. The device according to Claim 24, wherein said reference comprises a solid.

28. The device according to Claim 21, wherein said device further comprises a sample of low transmissivity.